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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

OREGON STATE OFFICE
P O. Box 2965 (825 NE Multnomah Street)
Portland, Oregon 97208

IN REPLY REFER TO:

May 5, 1987

Dear Interested Party,

Enclosed for your information is the Bureau of Land Management Oregon State Office's approval of the Record of Decision for the Northwest Area Noxious Weed Control Program. The enclosed document summarizes the decision's provisions governing noxious weed control and eradication on public lands in Oregon and Washington. The decision is derived from the Supplemental Environmental Impact Statement (SEIS), entitled "Supplement to the Northwest Area Noxious Weed Control Program". The selected alternative reflects public input received during scoping, on the draft and final EIS, and on the draft and final Supplement to the final EIS.

Release of this decision to interested groups and individuals will serve as public notice of the decision.

Thank you for your cooperation and we look forward to any further input you may have that will assist us in managing the public lands.

Sincerely Yours,

Charles W Luscher

Charles W. Luscher
State Director, Oregon and Washington

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Decision

I approve and concur in the adoption of the Northwest Area Noxious Weed Control Program as defined in the attached Record of Decision and analyzed in the Final Supplement to the Environmental Impact Statement, entitled "Supplement to the Northwest Area Noxious Weed Control Program" U.S. Department of the Interior, Bureau of Land Management (March 1987).

The public is advised that an integrated approach for the control of noxious weeds will be implemented in the States of Oregon and Washington.

BLM projects that an estimated average of 26,890 acres would be treated annually in the State of Oregon and 1,839 acres in the State of Washington using chemical, manual, mechanical, and biological control methods.

Implementation of this program is dependent on the level of funding received annually and the allocations determined by program priority.

Charles W Luscher

May 5, 1987

Charles W. Luscher
State Director, Oregon and Washington

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

I approve and concur in the adoption of the Northwest Area Noxious Weed Control Program as defined in the attached Record of Decision and analyzed in the Final Environmental Impact Statement, entitled "Northwest Area Noxious Weed Control Program" (U.S. Department of the Interior, Bureau of Land Management December 1985), and Final Supplement Northwest Area Noxious Weed Control Program (March 1987).

5-5-87
Date

Director

I concur in the above decision adopting the Northwest Area Noxious Weed Control Program.

5-5-87
Date

James E Cason
Acting Assistant Secretary
Land and Minerals Management

BUREAU OF LAND MANAGEMENT
SUPPLEMENTAL RECORD OF DECISION
NORTHWEST AREA NOXIOUS WEED CONTROL PROGRAM

INTRODUCTION

The Bureau of Land Management (BLM) arrives full circle to decide again whether to use herbicides to control and eradicate noxious weeds on public lands it administers in Idaho, Montana, Oregon, Washington, and Wyoming. Last year, BLM announced a program for controlling and eradicating noxious weeds in the northwest United States. See BLM, Record of Decision for the Northwest Area Noxious Weed Control Program (ROD) (1986). The program involved four methods, including the use of herbicides. BLM had analyzed the program, including its reliance on herbicides, in the Final Northwest Area Noxious Weed Control Program Environmental Impact Statement (FEIS) (1986). Within 3 months, though, BLM's decision to use herbicides as part of that program was suspended. See 51 Federal Register 24233 (1986). The announcement stated that BLM would not use herbicides until it supplemented the FEIS's discussion on the subject. BLM completed supplementing the document 2 months ago. The work is published in the Supplement to the Northwest Area Noxious Weed Control Program: Final Environmental Impact Statement (SEIS) (1987). Today, BLM presents its supplemental record of decision.

THE DECISION AND ITS SPECIFIC PROVISIONS

To control or eradicate noxious weeds, BLM will use six commercial products containing herbicides: Banvel, Rodeo, Tordon 22K, Tordon 2K, Esteron 99 and DMA-4. These formulations contain different herbicides designed to kill or retard the growth of noxious weeds: dicamba in Banvel; glyphosate in Rodeo; picloram in Tordon 22K and Tordon 2K; and 2,4-D in Esteron 99 and DMA-4.

BLM will use the herbicide formulations as part of its ongoing program for controlling or eradicating noxious weeds. BLM has been using three methods. If noxious weeds are susceptible to insects, pathogens, or grazing by goats or sheep, BLM may introduce those biological agents to retard weed growth. BLM may also use laborers to manually remove noxious weeds and apply mechanical treatment--burning, mowing, and tilling. With this record of decision, BLM may use the herbicide formulations as a fourth technique.[1]

The provisions governing the use of Banvel, Rodeo, Tordon 22K, Tordon 2K, Esteron 99 and DMA-4 to control or eradicate noxious weeds parallels the features stated under Alternative 1 in the FEIS, Chapter 1; the SEIS, Appendix 1; and BLM policy statements and manuals referred to in those documents. The word "parallels" is used because the decision in several instances differs from the original proposal by requiring the more judicious use of the substances to avoid or minimize environmental effects of their use.

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[1]BLM will not use products containing dicamba, glyphosate, picloram, and 2,4-D on public lands administered by its Oregon State Office until the court dissolves its injunction in Northwest Coalition for Alternatives to Pesticides v. Block et al., No 83-6272-E (D. Ore. 1984).

BLM will apply Banvel, Rodeo, Tordon 22K, Tordon 2K, Esteron 99 and DMA-4 only in accordance with the standards that the Environmental Protection Agency (EPA) imposes upon their public use. These standards are stated on the product labels.

BLM will use the commercial products only if the noxious weeds targeted for treatment are susceptible or highly susceptible to their herbicides. What this means is that the commercial products' herbicides, with one treatment, can retard at least 85 percent of the growth of the targeted noxious weeds. BLM will not use herbicide formulations if another method is more effective.

The herbicide formulations may be applied by helicopter; by ground vehicles equipped with boom or handgun sprayers; or by workers with backpack sprayers, broadcast cyclone sprayers, or tools for hand wiping the substances onto the plants.

Ordinarily, two considerations govern the choice of method. The choice first depends upon the treatment objective, topography of the treatment area, expected costs, and equipment limitations. The second consideration is the selectivity of the herbicides. Since Rodeo, which contains glyphosate, is not selective in the plants it kills or retards, it may be applied only from the ground to the noxious weeds targeted for treatment. And because the other herbicide formulations are toxic to conifer seedlings, the same restriction applies to how these herbicides are applied if conifers are being grown as commercial timber on the site to be treated. The restriction does not apply once the conifer seedlings become dormant, usually in the late summer. Unless conifers are present, the herbicides in Banvel (dicamba), Tordon 22K and Tordon 2K (picloram), and Esteron 99 and DMA-4 (2,4-D) may be applied by any method.

In applying the herbicide formulations, BLM will also abide by the following measures to reduce environmental impacts. None of the products may be applied within 500 feet of any residence or other place of human occupation unless the occupant or resident gives his consent in writing. Commercial products will not be applied within 100 feet of any croplands or by helicopter within 100 feet of any surface waters or identified ground water recharge area. Nor will the commercial products be applied by ground vehicles equipped with boom sprayers within 25 feet of any waters. Spot treatments with vehicle-mounted handguns or with backpacks will not be applied within 10 feet of water. Herbicides will be wiped on individual plants up to the current water line and will be applied by helicopters only when wind velocity does not exceed 5 miles per hour. Wind speeds may not exceed 8 miles per hour under any other herbicide application method.

Certain restrictions also govern the equipment used to apply the formulations. Spray nozzles on all helicopters and ground vehicles must be set to produce spray droplets with a median diameter of 200 microns or larger. Helicopter and ground vehicle equipment must also operate with a boom pressure of 20-35 pounds per square inch, unless the herbicide's label specifies a different pressure. Aerial applications must be within 100 feet of the ground. Backpack applications of liquid formulations will be allowed only with low nozzle pressure and within 2.5 feet of the ground. Granular formulations will be applied by broadcast spreaders only within 3.5 feet of the ground.

One final set of restrictions governs the maximum amount of the herbicides in each of the commercial products that may be applied. The FEIS, as modified by the SEIS, includes a table showing the maximum rates of application. BLM's proposal was to apply dicamba at 6 pounds per acre, glyphosate at 3 pounds per acre, picloram at 1 pound per acre, and 2,4-D at 3 pounds per acre. If, however, small animals susceptible to dicamba or 2,4-D are on the site to be treated and represent sensitive wildlife species in the area, BLM will not use these substances if glyphosate or picloram can be used instead. Or, if that is not possible, BLM will substantially reduce the amount of dicamba or 2,4-D to be applied per application. In addition, BLM ordinarily will apply the commercial products only once a year to any site and, except under circumstances where control or eradication goals are not achieved, no more than three times during the program's span.

The provisions governing BLM's use of herbicides in this program require measures to mitigate possible environmental effects. More mitigation measures are included in the FEIS, the SEIS, and the policy statements and manuals they cite. All are incorporated by reference into this supplemental record of decision. The purpose of the mitigation measures is to ensure the judicious use of the herbicides.

BLM projects that it will annually use the herbicide formulations to control or eradicate noxious weeds on about 21,300 acres of the public lands in the Northwest: 7,800 acres in Idaho, 5,600 acres in Montana, 6,600 acres in Oregon and Washington, and 1,300 acres in Wyoming.

BLM will treat public lands infested or potentially threatened by noxious weeds according to a set of priorities, which are detailed in the SEIS, page 119. The priorities represent BLM's commitment to pursue all existing methods for controlling or eradicating noxious weeds, including the use of herbicide formulations, with no undue reliance on any one means. The priorities detailed in the SEIS are part of this decision.

THE DECISION'S RATIONALE

A. Statutory Considerations

Two statutory mandates guide BLM in managing public lands. Section 302(b) of the Federal Land Policy and Management Act of 1976 directs BLM to "take any action necessary to prevent unnecessary or undue degradation of the lands" (43 U.S.C. 1732(b)). Section 2(b)(2) of the Public Rangelands Improvement Act of 1978 adds that BLM will "manage, maintain and improve the condition of the public rangelands so that they become as productive as feasible . . . " (43 U.S.C. 1901(b)(2)).

BLM therefore must act to control or eradicate noxious weeds. The FEIS documents the presence of noxious weeds on the public lands; and, as the SEIS evidences, noxious weeds remain there in large numbers. Moreover, as stated in the 1986 ROD (page 2), noxious weeds degrade the environment and make the public lands unproductive:

Actual damages from the presence of noxious weeds include the reduction and elimination of desirable vegetation from the public lands through competition for water and soil nutrients. As a result, soil quality is lessened, erosion is increased, and livestock and wildlife yields are reduced because less desirable forage is available. Impaired animal development and death of livestock and wildlife from the consumption of poisonous or toxic noxious weeds have been documented. Noxious weeds result in less efficient use of both public and adjoining or intermingled private lands. The presence of noxious weeds create costs to governmental entities and private landowners who must expend monies to control or eradicate the weeds. Other costs include decreased property values, expensive rights-of-way management and limited crop alternatives. Professionals have studied and reported economic losses from noxious weeds in the Northwest to run in the millions of dollars. Regardless of the actual economic loss, noxious weeds cause undue and unnecessary environmental degradation.

Or, as Section 2 of the Federal Noxious Weed Control Act of 1974 declares, "the growth and spread of [noxious] weeds . . . interfere[s] with the growth of useful plants, clogs waterways and interferes with navigation, causes disease, and other adverse effects upon man and his environment . . ." (7 U.S.C. 2801).

B. Overall Perspective

As registered by EPA under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), herbicides differ from many other toxic substances. To be registered for commercial sale and public use, herbicides must provide specific economic and social benefits. This is not to say that herbicide use is free from environmental hazard or risk. Indeed, in registering a herbicide for commercial sale and public use, EPA must apply another standard under FIFRA--whether it poses an unreasonable risk to human health or the environment. Each herbicide already enjoys a regulatory finding by EPA that it poses no unreasonable risk to human health or the environment in light of the benefits of its use.

BLM's decision, though, cannot and does not end with reliance on EPA's judgments under FIFRA that each herbicide is safe enough to be commercially sold and publicly used. Studies supporting the registration of commercial products containing dicamba, glyphosate, picloram, and 2,4-D, in varying numbers and degree, do not always coincide with current protocols for human health research. New studies and disagreement among experts about past studies raise more questions. Yet, still other evidence confirms the studies supporting registration. And, perhaps most important, as the SEIS states, science does not fully inform BLM about the herbicides' hazards. Incomplete data raises questions about the uncertainty of the risks involved.

After considering the SEIS disclosures, BLM has decided that dicamba, glyphosate, picloram, and 2,4-D, as formulated in Banvel, Rodeo, Tordon 22K and Tordon 2K, and Esteron 99 and DMA-4, respectively, are still safe to use. Of course, safe does not mean risk free. Rather, safe means that each herbicide's environmental hazards and risks are acceptable ones to take.

The decision to use the herbicides also turns upon the judgment that forgoing their use substantially compromises BLM's efforts to control or eradicate noxious weeds. Environmental and other costs would result. It is this last consideration that BLM chooses to explain first.

C. The Environmental and Other Costs of Forgoing the Use of Herbicides

The record shows that forgoing the use of herbicides is an unacceptable alternative in itself.

At the outset, the 14 noxious weeds targeted for control or eradication--Canada thistle, common tansy, common toadflax, dalmatian toadflax, diffuse knapweed, Dyers woad, hoary cress, leafy spurge, musk thistle, Russian knapweed, Scotch thistle, spotted knapweed, tansy ragwort, and yellow starthistle--are susceptible or highly susceptible to at least one of the herbicides to be used. Specifically, under proper conditions, one herbicide among the four can--with just one treatment--suppress 85 to 94 percent of the growth of each of the noxious weeds. Moreover, several noxious weeds are susceptible to the herbicides. For example, if BLM applies Banvel, containing dicamba, just once, it can expect the herbicide to kill over 95 percent of the existing population of Canada thistle, diffuse knapweed, Dyers woad, or spotted knapweed. Similarly, if BLM applies Rodeo, containing glyphosate, just once, it can expect the same result for common tansy, musk thistle, Scotch thistle, spotted knapweed, and yellow starthistle. And, Esteron 99 and DMA-4, containing 2,4-D, has the potential under proper conditions to kill over 95 percent of diffuse knapweed, musk thistle, or Scotch thistle. BLM can thus reasonably expect that by using the herbicides, it can control with one treatment over half of the existing noxious weeds targeted for treatment. Exposure to at least one of the herbicides will arrest noxious weed growth.

The same degree and breath of success, though, does not occur with the other noxious weed control methods. Manually removihg noxious weeds is most effective with annuals and biennials but is generally unsuccessful in controlling the growth or perennials. Of the 14 noxious weeds targeted for treatment, 11 are perennials. Manually removing noxious weeds, then, is most effective on musk thistle and Scotch thistle, both biennials, and yellow starthistle, an annual. Manual methods may also prove useful for some biennial species of diffuse knapweed and annual species of spotted knapweed. Mechanically removing noxious weeds, either by burning, mowing, or tilling, is equally inefficient when trying to control perennial growths. Burning, mowing, or tilling may actually stimulate the growth of some noxious weeds, like tansy ragwort and leafy spurge.

The other method available to BLM--using pathogens, insects, or grazing animals--is also of limited use. Biological agents themselves cannot perform eradication functions. Most of the biological agents available for use merely stress noxious weeds, and no pathogens are known to kill any of the noxious weeds targeted for treatment. No biological control procedures have ever eradicated a weed species. Goats and sheep have been used in a few circumstances to control the top growth of leafy spurge but have not been demonstrated to do so on an extensive basis. Goats and sheep have only been successful under confinement but not on the open range. No insects have resulted in practical control of common tansy, yellow or dalmatian toadflax, Dyers woad, hoary cress, Russian knapweed, Scotch thistle, or yellow starthistle.

Although insects are available for use on seven of the noxious weeds, their effectiveness is limited. Just because an insect lives on a weed species does not mean it provides control. Tansy ragwort is the only noxious weed species of the 14 targeted for treatment that insects have been somewhat effective in controlling. Insects have been only partially effective in suppressing musk thistle. Canada thistle may be susceptible to two insects, but the data is inconclusive on one, and the other is established only in Montana. The one insect that may suppress dalmatian toadflax is also established only in Montana, and its effectiveness on a broad scale has not been demonstrated. One insect is known to reduce the seed population of diffuse knapweed, but the effectiveness of two other insects that live on diffuse knapweed seeds remains uncertain. Six insects have been identified as possible biological agents against the growth of leafy spurge. Only two have been shown to provide partial reduction of weed growth in localized, confined situations in Montana. Musk thistle is suppressed by two insects, and the effectiveness of a third is uncertain. Of the three insects that may affect the growth of spotted knapweed, research is still ongoing; it is too early to assess their effectiveness. Three insects in Oregon have been shown to retard from 60 to 80 percent of the growth of tansy ragwort.

Forgoing the use of the herbicides thus means that BLM will have no highly effective method for controlling noxious weeds across the five-state region. Repeated manual or mechanical treatments, both more expensive and less effective than herbicides, would have to be used. Biological agents have not been found to control these noxious weeds. Though biological agents are still being studied for their potential as an alternative to herbicides, these agents are limited in applicability and effectiveness for Canada thistle, dalmatian toadflax, diffuse knapweed, leafy spurge, musk thistle, spotted knapweed, and tansy ragwort.

To forgo using herbicides to control or eradicate noxious weeds would also be to ignore prevailing thought among weed science professionals, who advocate the use of all methods to control noxious weeds. Most weed science professionals emphasize that an integrated approach does not necessarily mean less use of herbicides. In some cases, they hold that herbicide use should increase. They stress that effective weed control or eradication usually requires the use of all existing methods.[2]

Most important, because forgoing the use of herbicides means ineffective control of noxious weeds, if BLM were to do so, it would have to accept the environmental effects and economic costs of noxious weeds. The SEIS (page iii) observes the following:

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[2]Several commenters have suggested that BLM forgo the use of herbicides until it evaluates another choice. The suggestion is that BLM examine other management practices and uses of the public lands, including livestock grazing, that may contribute to the presence of noxious weeds. This alternative, however, ignores that, given the magnitude of noxious weed infestations, BLM defined its program as mainly performing control or eradication through conventional means. Given the magnitude of the problem, the program's focus is on ameliorating the symptoms. Present management practices and changes in the use of public lands are well beyond the scope of the program BLM defined.

> Noxious weeds reduce and eliminate desirable vegetation from public lands by competing with native plants for water, sunlight, and soil nutrients. The secondary effects of this competition include lower soil quality, increased erosion, and reduced livestock and wildlife yields through the presence of less desirable forage.

The FEIS (page 2) also states that as a result of noxious weeds remaining uncontrolled, "crop yields are being reduced, rangeland . . . is being invaded, and wildlife habitat is being reduced." The evidence is substantial, including studies from Chase 1985, Butcher 1984, Kelsey 1984, Morris and Bedunah 1984, and Penhallegon 1983. The economic costs resulting from ineffective control of noxious weeds are described this way in the SEIS (page iii):

> Noxious weeds also result in less efficient use of both public and private lands and incur costs . . . Noxious weeds decrease public and private property values. Lands infested by noxious weeds cost more to manage, and may limit crop choices.

The FEIS (page 2, citing Kelsey 1984, Jenson 1984, Butcher 1984, Chase 1985, Lewiston Morning Tribune 1980, Baker 1983, and Nielson 1978) is more specific, observing that "Economic loss from noxious weeds is considerable and runs into the millions of dollars annually in each state in the [northwest]." Moreover, many state and local agencies charged with controlling noxious weeds have stated that forgoing the use of herbicides carries with it economic and environmental costs. (See SEIS, Chapter 4, Consultation and Coordination.)

Another consideration that must also be weighed arises under the Carson-Foley Act of 1968 (43 U.S.C. 1241). The statute directs federal agencies "to permit the commissioner of agriculture or other proper agency head of any state in which there is in effect a program for the control of noxious weeds to enter upon any lands under [the federal agency's] control or jurisdiction and destroy noxious plants growing on such land." And where a state or its political subdivisions extend their program for controlling noxious weeds onto public lands, the federal agency is obligated to reimburse them for the expenses they have incurred (43 U.S.C. 1242).

Through the Carson-Foley Act, Congress implicitly recognizes that noxious weeds know no jurisdictional boundaries. Congress also acknowledges that where noxious weeds cross boundaries, a state or locality is entitled to cross that boundary where needed to control or eradicate the infestation.

A ban on the use of herbicides on public lands would impede a state or locality relying on that method when attempting to cross jurisdictions and control noxious weeds on adjoining public lands. The state or locality would have to change its reliance on herbicides when crossing jurisdictions. The inefficiencies in this type of regime are self-evident. They also are of real concern to state or local governments charged with controlling noxious weeds. (See SEIS, Chapter 4, Consultation and Coordination.)

Foregoing the use of herbicides, thus, makes little sense. It would compromise BLM's ability to effectively control or eradicate noxious weeds and would have environmental effects and incur economic costs. State and local efforts would be impaired. And these considerations are not outweighed by the herbicides' hazards to the natural environment and risks to human health.

D. The Environmental Effects of Using Herbicides

Using dicamba, glyphosate, picloram, and 2,4-D, as formulated for noxious weed control poses hazards to the natural environment and risks to human health. BLM's decision accounts for this fact by examining the nature of the harm and its likelihood. BLM's decision also considers the risks in relation to others commonly encountered. When placed into proper perspective, the environmental effects of using the herbicides are acceptable.

1. The Herbicides' Hazards to the Natural Environment

The SEIS lists several hazards to the natural environment from the herbicides proposed for use. BLM's decision to use the formulations thus begins by acknowledging their hazards and then proceeds to discuss their relevance.

The herbicides have properties that may harm the soils of the public lands. The SEIS (page 2) describes the two most important properties, mobility and persistence, as follows:

> Persistence refers to the length of time a herbicide remains active in the soils . . . Persistence is . . . important because, if a herbicide is present in the soil in high enough quantities, its residual toxicity can have unintended after-effects that may injure succeeding plants for a period of time after application. Mobility refers to the ability of a herbicide to move within the soil profile. Mobility is important because if a herbicide is present in the soil in high enough quantities and moves throughout the profile, its residual toxicity can have unintended after effects that may injure plants elsewhere.

Considering the literature, the SEIS (pages 2-4) states that the herbicides have the potential to persist in arid soils and, except for glyphosate, are mobile in most soils. The potential for environmental harm, thus, exists.

Whether environmental harm will manifest itself depends upon the herbicides' being present in the soil in high enough amounts to result in residual toxicity. The studies showing the herbicides' residual toxicity, either from persistence or mobility, all have involved applying herbicides at rates exceeding 6 pounds per acre. Since the decision calls for applying herbicides in amounts at or well below 6 pounds per acre, BLM does not expect herbicide persistence or mobility to affect soil quality.

Other considerations further diminish the environmental costs of the herbicides to the soils of the public lands. Neither dicamba, glyphosate, nor 2,4-D is expected to accumulate in the soils for any appreciable time. Although a slight potential exists for long-term accumulation of picloram, the prospect is reduced by the low application rate. Furthermore, none of the herbicides are expected to persist in soils high in organic matter. And because the herbicides will not persist in those soils, their mobility is largely beside the point. Thus, using the four herbicides to control or eradicate noxious weeds in northern Idaho, western Montana, and western Oregon, where soils are high in organic matter, would not substantially harm soils.

The likelihood of the herbicides' contaminating surface waters is highly remote. This does not mean that the herbicides will be undetected in those bodies of waters. The SEIS, in fact, states that dicamba, glyphosate, picloram, and 2,4-D all have been observed in streams and lakes in the Northwest. Detectability, however, does not in itself mean significance. Although water quality standards for allowable herbicide concentrations in water are established in the parts-per-million range, no detected level of the herbicides in surface waters has even come close to approaching that level. Herbicides have been detected only in parts per billion.

Other considerations further diminish concerns about the herbicides' contaminating surface waters. The studies showing detectability, regardless of the levels' insignificance, have involved circumstances far different from those existing under today's decision. Unlike many of the situations studied, the herbicides will neither be applied aerially within 100 feet of streams or lakes nor when wind speeds exceed 5 miles per hour. The herbicides will ordinarily be applied only once annually. And unlike the circumstances studied showing detectability, the herbicides will be applied in amounts well below what is permissible. In short, the chance is remote that the herbicides will even be detected in surface water.

The same analysis applies to herbicide impacts on ground water.

Although the potential for glyphosate to enter ground water is slight given its adsorption to soils, the SEIS states that "[s]ince [dicamba, picloram and 2,4-D] are mobile herbicides . . . the potential exists for detectable traces to enter the ground water." The document further advises that if the herbicides enter ground water in detectable levels, they might persist for a relatively long time.

Detection, though, is not the same as contamination. In studies on farmlands involving the repeated use of dicamba and 2,4-D on heavily irrigated sites with high water tables and permeable soils, the levels of each substance detected in nearby ground water did not exceed water quality standards. BLM expects the same conclusion to apply with even greater force to using the two herbicides here. They will not be applied repeatedly, and they will be applied on semiarid sites as opposed to heavily irrigated sites with high water tables. And they will not be applied aerially within 100 feet of any identified ground water recharge area. Using dicamba or 2,4-D to control or eradicate noxious weeds, thus, is unlikely to contaminate ground water.

BLM has found no studies addressing picloram's potential to enter ground water in significant amounts. But because picloram is less mobile than either dicamba or 2,4-D, one can reasonably assume that its potential to enter ground water and not contaminate it is negligible. BLM thus assumes that picloram's risk to ground water is the same as that found for either dicamba or 2,4-D.

Unlike the herbicides' hazards to soils and water, a wealth of information exists about their potential to kill and retard the growth of plants. The four herbicides are toxic to many other plants than just the noxious weeds targeted for treatment. And if the herbicides are applied aerially or by ground vehicle, their residue is likely to be left on nontarget vegetation. Thus, the use of the herbicides to control noxious weeds will potentially kill or injure susceptible nontarget plants in the target area.

The degree of harm to nontarget vegetation varies depending on the herbicide used. Glyphosate is by far the most indiscriminate herbicide, killing or retarding the growth of most perennial plants, annual and biennial grasses, sedges, and broadleaf plants. Dicamba, picloram, and 2,4-D, in contrast, are more selective; only broadleaf plants and conifer seedlings are susceptible to their toxic properties, and grasses highly resist them.

The degree of harm to nontarget vegetation also varies depending on how the herbicides are applied. If the substances are applied aerially or by ground vehicles equipped with boom sprayers, the residue is indiscriminately left on any plants within the broadcast of the spray. In contrast, if the substances are applied specifically to noxious weeds by other methods, residue is highly unlikely to be left on nontarget species.

In evaluating the harm to nontarget vegetation, BLM is also mindful that killing or retarding the growth of noxious weeds enhances the growth of desired vegetation. In the Northwest, BLM's objective is to promote the growth of grasses on the public rangelands and conifers in the region's forests.

Against this background, it makes sense to apply dicamba, picloram, and 2,4-D, either aerially or by ground vehicle on the public rangelands. The desired species, namely grasses, highly resist the substances. And through the three substances could weaken or destroy broadleaf plants like rabbitbrush, greasewood, mountain mahogany, sagebrush, willow, aspen, and many forbs in or near the treatment sites, the harm must be kept in perspective. Broadleaf plants grow throughout the Northwest in large amounts. The loss of that vegetation on isolated, small tracts throughout the region would not seriously damage the diversity of plant life on the public lands.

The same conclusion does not necessarily apply to the forested regions, where the use of dicamba, picloram, or 2,4-D would pose a known risk to conifer seedlings until they become dormant. The seedlings are highly desired for economic reasons. To avoid damaging conifer seedlings, BLM must apply the substances specifically to the targeted species rather than by broadcast applications. BLM's decision includes this limitation.

Because glyphosate destroys all vegetation, BLM cannot accept the indiscriminate killing of nontarget vegetation from applying it aerially or by ground vehicles equipped with boom sprayers. The only way to protect nontarget vegetation is to require that it be applied specifically to the targeted species. Again, BLM's decision contains this limitation.

Finally, in deciding to use the herbicides to control or eradicate noxious weeds, BLM acknowledges that two of the four substances to be used will pose known hazards to fish and wildlife. Dicamba's hazards to wildlife are characterized as follows:

> Several species will be exposed to levels exceeding [the dose that kills 50 percent of the animals tested in laboratories]. Some species, particularly small animals, [therefore,] could be harmed by exposure to dicamba.

The SEIS also offers similar opinions about 2,4-D's hazards to fish and wildlife: "2,4-D . . . is toxic to highly toxic to aquatic species. Some small mammals, amphibians, and reptiles may experience minor to moderate acute toxic effects . . ."

In contrast, neither glyphosate nor picloram is expected to substantially harm fish or wildlife.

In considering dicamba and 2,4-D's threat to wildlife, BLM takes the view that the inquiry does not stop with their identification. The hazards must be further examined to ensure that their harm is properly understood.

Consistent with this framework, the SEIS states that dicamba and 2,4-D's hazards to wildlife are short term and reversible and affect only a few species. The SEIS further states that the affected species are commonplace throughout the region. For example, the SEIS offers the following perspective worth noting on the species affected by dicamba:

> Larger animals are not likely to be affected by the use of dicamba in noxious weed control, but individual smaller animals seem likely to experience minor to moderate acute toxic effects from the use of dicamba. Some animals, particularly small mammals, amphibians, and reptiles, may die as a result of dicamba application.
>
> The effects of dicamba on populations of these animals would depend on the extent of the treated area. Local populations of smaller animals may experience some decline if a large area is treated, although the reproductive capacity of most of these animals is sufficient to replace lost individuals during the next breeding cycle. Populations of larger mammals and birds should not be affected by dicamba treatments.

The representative species being considered--mice, rabbits, toads, snakes, and lizards--are commonplace throughout the Northwest. The short-term effect on sensitive wildlife populations would be further reduced by using lower rates of dicamba and 2,4-D. BLM's decision heeds this advice.

Special mention must be made of 2,4-D's toxicity to aquatic life. This toxicity is not expected to manifest itself if applied in amounts below 3 pounds per acre. The SEIS explains the expectation in the following way.

> To determine the risk to aquatic species, the toxicity values of each herbicide . . . were compared to the expected herbicide concentrations in water . . . The Q (quotient) -value described by EPA-HED (1961i) is used to estimate the potential for adverse effects: where . . . [a] Q-value of [less than] 0.1 reveals that no adverse effects are likely.

The estimated aquatic concentrations of 2,4-D range from 22.5 to 29.3 [parts per billion] at an application rate of 3 lbs/acre . . . The maximum expected environmental concentration is about 0.03 [parts per million].

Q-values for 2,4-D were calculated using the [estimated environmental concentrations] of 0.03 [parts per million] and [toxicity values listed]. The Q values were less than 0.1 for all species listed, showing that no adverse effects to aquatic species are expected from 2,4-D butoxyethanol ester.

Thus, using 2,4-D as formulated in Esteron 99 and DMA-4 at least 100 feet from water and in amounts less than 3 pounds per acre avoids hazards to aquatic life.

In closing, the record shows that the environmental effects to the public lands from using the herbicide formulations are likely to be relatively small.

2. The Herbicides' Risks to Human Health

The SEIS states that "under routine operations the public should not suffer adverse health effects as a result of [the agency] using any of the four [sic] herbicide formulations." Specifically, the SEIS makes four findings relating to the effects of human exposure to the herbicides:

No member of the public is likely to die.

No general systemic effects [e.g., appetite loss, changes in body weight, nausea, irritated eyes or skin, decreased enzyme levels, kidney or liver damage,] are likely to occur, except in the unlikely event of a small child repeatedly drinking water contaminated with high levels of 2,4-D.

No reproductive effects, including birth defects, are likely.

A negligible chance exists of the public getting cancer or producing heritable mutations . . .

The SEIS acknowledges that "[t]here is always the possibility that some very sensitive or high-risk individual will experience adverse health effects." The possibility, though, is discounted since the additional factors used to account for the uncertainty in this regard "indicate that the vast majority of even sensitive individuals should not be affected."

The SEIS's information, though, leaves unanswered whether the risks that have been measured--improbable as they are--should be taken. Should BLM use the herbicides if a chance exists that some persons exposed to them will have a higher incidence rate of cancer or of developing heritable mutations?

In considering whether the risks are worth taking, BLM is guided by common-sense advice from many experts. Safe does not mean risk free. Some risks are plainly acceptable.

With this perspective in mind, BLM turns to the human health consideration that has overriden all others in its decision to use herbicides--the possibility that people exposed to herbicides will have higher incidence rates of cancer.

At the outset, BLM does not deny the possibility that science may some day establish that any one of the herbicides is a carcinogen. But, as the SEIS states, the scientific community has yet to reach that conclusion. No studies have shown a relationship between dicamba, glyphosate, picloram, or 2,4-D and cancer and also satisfied accepted scientific conventions for labelling any of the substances as known carcinogens. The SEIS also discloses that the most of the researchers have yet to hold that dicamba or picloram are carcinogens. Indeed, recent studies do not support the hypothesis that glyphosate is a carcinogen. EPA and its Scientific Advisory Panel disagree whether studies prove its validity. A similar debate exists about 2,4-D.[3] What emerges from existing literature, with the possible exception of dicamba, is that the scientific community has not arrived at any consensus about the validity of the hypotheses that the substances are carcinogens.

The conflicting studies and data gaps giving rise to the discord about whether the herbicides are carcinogens could justify forgoing their use. The rationale is that, because science has failed to establish that the herbicides are not carcinogens, the inference arises that they may be. The theory further holds that, because science also has failed to disprove the possibility that the most minute amount of a suspected carcinogen, even a single molecule, might give someone cancer, the only safe dose or exposure is zero. The difficulty with this rationale, through, is that in both instances its applicability rests on science's inability to prove negatives, an impossible task in logic.

BLM refuses to base its decision on propositions that defy logic. Indeed, given the nature of scientific inquiry, the relevant consideration is whether the hypotheses that the substances are carcinogens have been proven. They remain unproven. Accordingly, until science shows that the herbicides are in fact or likely to be carcinogens, BLM is unwilling to forgo the benefits of their use. To conclude otherwise would be equating safe with risk free.

BLM is aware that a cost to human health arises if the herbicides are proven to be carcinogens. Though this is an unlikely prospect for dicamba given recent literature, it is most certainly possible for glyphosate, picloram, or 2,4-D.

The risk of BLM being wrong in presuming glyphosate, picloram, and 2,4-D are not carcinogens, of course, is the worst case in proceeding with the use of the herbicides. The SEIS is illuminating in this regard. It posits a number of scenarios that vary in consequence but all share the view that the

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[3]BLM acknowledges that an erroneous statement appearing on page 70 of the SEIS grossly overstates the level at which 2,4-D is acutely toxic. In referring to a study by Beck and others, the SEIS erroneously expressed the substance's toxicity in micro amounts when the toxicity should have been expressed in grams per kilogram.

substances are carcinogens and that exposure to even one molecule may cause cancer in someone.

Under the worst of the scenarios posited for the public--an accidental, concentrated spill of glyphosate, picloram, or 2,4-D directly onto a person--and under the assumption that the substances are carcinogens and may cause cancer through any level of exposure, the incidence rate of cancer that can be projected is insubstantial. For example, the accidental spill of 2,4-D under the scenario would lead to a risk of cancer of less than 2 in 100,000. Exposure to picloram in identical circumstances would lead to a risk of cancer approximating 1 in 10 million. And exposure to glyphosate under the same scenario would result in a rate of about 7 in 100 million.

To put these scenarios into perspective, they can be compared to everyday activities that pose a greater risk then cancer, namely, death. A person who drives a car assumes a 2 in 10,000 risk of dying from that activity. Or, a person who must have a single x-ray taken, confronts a risk of 7 in 1 million of dying from that event. BLM acknowledges that the risks are not necessarily comparable. But what they show is undeniable: even under the worst case, the possibility of people having higher incidence rates of cancer after being exposed to the herbicides is insubstantial when measured against just two realities of everyday life.

The SEIS also contains one other scenario that deserves attention. It involves a person working with glyphosate, picloram, or 2,4-D every year for 40 years, who never wears protective clothing, and who is exposed to concentrated forms of the substances. Presuming the substances are carcinogens and may cause cancer through any level of exposure, the SEIS projects that under all circumstances save one, the worker's risk of developing cancer under the scenario should not exceed 7 in 100,000. The exception is for a worker mixing or loading 2,4-D into a ground vehicle. The risk there is nearly 2 in 10,000.

Upon first glance, this scenario is neither plainly acceptable nor plainly unacceptable. But, the SEIS provides a reference point in observing that "[w]working for 30 years in agriculture or construction has a fatality risk of about 2 in 100. In mining and quarrying the risk is even greater, estimated to be 3 in 100." Thus, the risk to workers in the worst case that can be posited about the herbicides--that they are carcinogens and may cause cancer through any level of exposure--still pales in comparison to other occupational risks.

In summary, considering the risk that glyphosate, picloram, or 2,4-D may some day be proven to be carcinogens, little cogent reason exists for forgoing the benefits of using the herbicides to control or eradicate noxious weeds. The risks that can be projected from that worst case are small.

The SEIS also advises BLM that "for 2,4-D and picloram there is some uncertainty about the potential to cause mutations." The chance that either substance may cause mutations in humans plainly competes for attention. In this regard, the SEIS advises that "because mutagenicity and carcinogenicity both follow similar mechanistic steps (at least those that involve genetic toxicity), the risk of cancer can be used to approximate the quantitative risk of heritable mutations." Given the analogy, coupled with the finding that "the risk of heritable mutations from 2,4-D and picloram would be no greater than the estimates of cancer risk," BLM concludes as it just did in the worst case for carcinogenicity. Because the possibility of 2,4-D and picloram being mutagenic is highly remote and the risks are significantly less than others society willingly accepts, the risks do not outweigh the benefits of the use of these herbicides.

BLM's approach to evaluating the herbicides' risks to human health--measuring them and comparing them to other risks accepted in everyday life--enjoys support in professional opinion. For example, after observing that a risk's acceptability is ordinarily evaluated through one of three methods of risk comparison, Doctor Sors of the University of London stated that "comparison of the risks in question with others commonly encountered is perhaps the most common form of [inquiry]." Professor Wilson of Harvard University advocates that decisionmakers should "try to measure . . . risks quantitatively . . . [and,] then compare [them]." Professor Sowby adds that decisionmakers need to pay attention to "some of the other risks of like."

The statements, of course, do not represent the unanimous opinion of all professionals working in the field of risk assessment and evaluation. For example, Doctor Slovic holds that measurement and comparison of risks ignores what the public says about them--preferences that should be considered. His rationale is as follows:

> Risk perception research suggests that these comparisons will not be very satisfactory. People's perceptions are determined not only be expected value statistics but also by a variety of quantitative and qualitative characteristics--including a hazard's degrees of controllability, the dread it evokes, it's catastrophic potential, the equity of its distribution of risk and benefits. In short, "riskiness" means more to people than "expected number of fatalities." Attempts to characterize, compare, and regulate risks must be sensitive to the broader conception of risk than underlies people's concerns.

In other literature Slovic's approach is commonly referred to as evaluating risk's acceptability on the basis of the public's expressed or revealed preference. According to Doctor Sors, however, an approach measuring the public's expressed preference, "is restricted to the more visible risks which people can understand and evaluate." Sors further states that, "It is unlikely to be significant in the evaluation of toxic chemicals" and explains that the other technique of public preference analysis--revealed preferences--"is based upon the assumption that by trial and error, society has arrived at a nearly optimal balance between the risk and benefits associated with any activity." The approach uses "statistical cost, risk and benefit data . . . to reveal patterns of acceptable risk." Again, Sors adds a caution about this approach: "It does not appear to be practicable on an individual chemical basis."

In sum, whatever the merits of evaluating risks according to public preferences, expressed or revealed, the approach has drawbacks. Even Doctor Slovic has recognized this reality. Hence, BLM considers it more prudent to rely on the conventional method for evaluating the herbicides' risk to human health.

According to some commenters, all of the preceding is for naught. They maintain that an analysis focusing on dicamba, glyphosate, picloram, and 2,4-D, rather than the commercial products they are formulated in, is incomplete. The commenters begin by observing that the commercial products contain other ingredients besides the herbicides, referred to as inert ingredients. They then point to an EPA document released in 1986 that states that inert ingredients in several instances are of or suggestive of toxicological concern. The implication is that the commercial products to be used here contain inert ingredients falling into these categories. But, as the SEIS states, when EPA was asked to comment on the validity of the contention, it held that neither Banvel, Rodeo, Tordon 22K, Tordon 2K, Esteron 99, nor DMA-4 contained any inert ingredients of or suggestive of toxicological concern. And, as the EPA's one caveat, that Esteron 99 contained a petroleum distillate that might be of concern, the SEIS accounted for that risk and found it insignificant. EPA is also on record that the SEIS properly accounts for and accurately represents its previous correspondence on the question of inert ingredients. BLM, therefore, does not consider the presence of inert ingredients in the commercial products to be used as warranting further consideration before proceeding with their use.

CONCLUSION

Today's decision represents a choice among alternatives carrying with them different risks. One alternative for BLM was using the herbicides to obtain their benefits in controlling and eradicating noxious weeds while accepting the environmental consequences. The other alternative was to avoid the herbicides' hazards to the natural environment and risks to human health while accepting the consequence that BLM's ability to control or eradicate noxious weeds would be compromised. In choosing the first alternative, BLM acknowledges it is accepting an alternative that carries with it risk. The environmental risks, though, when placed into perspective, are outweighed by the benefits of using herbicides to control or eradicate noxious weeds infesting public lands in the northwest United States.

DRAFT

ANALYTICAL OUTLINE FOR INTEGRATED NOXIOUS WEED CONTROL

Environmental Assessment Tiered to the Northwest Area Noxious Weed Control Program EIS as supplemented for Fiscal Year 1988

I. NEED FOR THE PROPOSAL

The Shoshone District proposes to implement a noxious weed control program consistent with the Idaho Noxious Weed Control Record of Decision dated May 5, 1987. This decision meets the Purpose and Need set forth in the Northwest Area Noxious Weed Control Program Final EIS of December 1985 as Supplemented (FSEIS). The statutes, policy, and planning criteria for that decision are set forth in the Final EIS as Supplemented and the Record of Decision (ROD).

Noxious weed control needs are prioritized as follows:

Priority I - Potential New Invaders - Emphasizes education and awareness of species that are not known to occur on the Shoshone District

Priority II - New Invaders - Eradication and/or control

Priority III - Established Infestations - Containment and prevention of further spread. See supplement to the Northwest Area Noxious Weed Control Program, page 119; and the Record of Decision, Appendix A, pages 20-21. The table in Appendix I shows the treatment priority by species and the preferred treatments.

Priority I species are of high concern in the District and in southern Idaho counties. Coordinated effort is made collectively between BLM, Wood River Resource Conservation District, Soil Conservation Service, County Commissions, County Weed Supervisors, County Extension Service, University of Idaho, etc., on a continuous basis through meetings, tours, literature exchanges, etc., to know and learn the status of these species timely to avoid them becoming greater or new problems. The present list of Priority I species is also shown in the Appendix I Table. An example of areas needing continued intensive monitoring are locations where livestock spend time when first arriving into this part of Idaho, such as sheep that winter in Arizona or California.

II. DESCRIPTION OF PROPOSED ACTION

The proposed action is the integrated noxious weed control program as described as the preferred alternative in the FSEIS. The program for the Shoshone District will be as detailed below:

Treatment	Acres
Chemical	
Ground Vehicle	310
Ground Hand	30
Manual	
Hand Tools	5
Biological	
Insects	4150
TOTAL	4495

The attached Appendix II shows the proposed project area locations, acres, treatment type, and type of site.

Refer to Appendix IV for maps showing proposed treatment sites.

Management treatments and project design features relating to weed control activities are presented in the FEIS pages 7 to 11, Appendix I, and supplemented in the Text Revisions section of the FSEIS (including district map(s) showing areas to be treated). All mitigation measures adopted in the Idaho Record of Decision are incorporated as additional project design features.

Estimated Annual Acreages of Chemical Treatment by Method would be as follows:

HERBICIDE	MAJOR TRADE NAME	EXPECTED MAXIMUM RATE OF APPLICATION[1/]	ESTIMATED ANNUAL ACREAGE
Ground Vehicle			
2,4-D amine salt or butyl ester		3 lbs ai/acre	193
Dicamba	Banvel	6 lbs ai/acre	6
Picloram[2/]	Tordon 22K (Liquid)	1 lb ai/acre	34
2,4-D & Dicamba	Tank mix	2 lb ai/acre 2,4-D 1½ lb ai/acre Banvel	59
Ground Hand			
2,4-D amine salt or butyl ester		3 lb ai/acre	36
Dicamba	Banvel	6 lb ai/acre	1
Picloram[2/]	Tordon 2K (liquid)	1 lb ai/acre	3
2,4-D & Dicamba	Tank Mix	2 lb ai/acre 2,4-D 1½ lb ai/acre Banvel	8

[1/] Liquids would be applied using water as the carrier.

[2/] No more than one application of picloram will be made on a given site in any year to reduce the potential for picloram accumulation in the soil.

ai = Active ingredient

Table 2

Treatment Priority 1/	Noxious Weed Species	IWM Priority 2/	Control Alt. 3/	Treatment Method 4/
1	leafy spruge (Euphorbia esula)	2	IWM	II
2	Scotch thistle (Onopordon acanthium)	2-3	IWM	II, III
3	black henbane (Hyoscyamus niger)	2	IWM	II, III
4	yellow starthistle (Centaurea solstitialis)	3	IWM-NA	I, II, III
5	common crupina (Crupina vulgaris)	3	IWM-NA	II
6	field bindweed (Convolvulus arvensis)	3	IWM-NA	II, IV
7	puncturevine (Tribulus terrestris)	3	IWM	II, III
8	poison hemlock (Conium maculatum)	3	IWM	II, III
9	diffuse knapweed (Centaurea diffusa)	3	IWM	I, II
10	spotted knapweed (Centaurea maculosa)	3	IWM	I, II, III
11	Canada thistle (Cersium arvense)	3	IWM-NA	I, II
12	dalmation toad flax (Linnaria dalmatica)	3	IWM	II, III
13	yellow toad flax (Linnaria vulgaris)	3	IWM	II, III
14	Tansy ragwort (Senecio jacobaea)	1	IWM	II, III
15	Silver-leaf nightshade (Solanum elaeagnifolium)	1	IWM	II, III
16	Rush skeleton weed (Chondrilla juncea)	1	IWM	II, III
17	Russian knapweed (Centaurea repens)	1	IWM	II, III
18	jointed goatgrass (Aegilops cylindrica)	1	IWM	III, II
19	Loosestrife (Lythrum salicaria)	1	IWM	II, III
20	Perennial pepperweed (Lepidium latifolium)	1	IWM	II, III
21	Buffalo bur (Solanum rostratum)	1	IWM	III, II
22	white top (Cardaria draba)	1	IWM	II, III
23	musk thistle (Carduus nutans)	1	IWM	III, II, I
24	wild carrot (Daucus carota)	1	IWM	II, III

1/ Treatment Priority List - Priority and order weeds will be treated within available funding.

2/ Integrated Weed Management Priority - 1: Potential New Invaders
2: New Invaders
3: Established Infestations

3/ Control Alternative - NA: No Action
IWM: Integrated Weed Management

4/ Preferred Treatment Method - I: Biological
II: Herbicide
III: Manual
IV: Mechanical

PROPOSED 1988 NOXIOUS WEED PROJECTS

NEW INVADERS

-get Weed Species: Leafy Spurge

Project Number	Location	Project Acres	Treatment Acres	Proposed Treatment	Site Factors
05-6-1	T 2 S, R 21 E., Section 31: NW¼	1	1	Picloram	Dry
05-6-2	T 2 S, R 20 E., Section 35: NW¼	50	5	Picloram	Dry
05-6-3	T 2 S, R 20 E., Section 35: SE¼	20	3	Picloram	Dry
05-3-2	T 2 S, R 17 E., Section 6: SW¼	1	Spot	Picloram	Dry
05-4-14	T 3 S, R 20 E., Section 2 & 10	200	10	Picloram	Along railroad
05-4-14	T 3 S, R 20 E., Section 1: SW¼	60	5	Picloram	Dry
05-4-16	T 3 S, R 21 E., Section 15: SW¼	20	4	Picloram	Dry
05-4-17	T 3 S, R 21 E., Section 17: NE¼	1	Spot	Picloram	Dry
05-4-18	T 3 S, R 21 E., Section 20: E½E½	20	5	Picloram	Dry

Target Weed Species: Rush Skeletonweed

Project Number	Location	Project Acres	Treatment Acres	Proposed Treatment	Site Factors
05-2-1	T 6 S, R 15 E., Section 32: W½	5	1	Picloram	Dry
05-4-4	T 6 S, R 16 E., Section 14: N½N½	10	1	Picloram	Dry

Target Weed Species: Dyers Woad

Project Number	Location	Project Acres	Treatment Acres	Proposed Treatment	Site Factors
05-2-2	T 6 S, R 12 E., Sections 3&4: S½S½	10	2	Dicamba	Dry
05-6-4	T 1 S, R 19 E., Section 19: NE¼	10	5	Dicamba	Dry

...get Weed Species: Scotch Thistle

Project ...umber	Location	Project Acres	Treatment Acres	Proposed Treatment	Site Factors
05-1-1	T 5 S, R 11 E., Section 25: SE¼	2	2	2,4-D & Dicamba	Dry
05-1-2	T 5 S, R 11 E., Section 24: S½	40	10	2,4-D & Dicamba	Dry
05-2-3	T 5 S, R 12 E., Section 19: S½	80	20	2,4-D & Dicamba	Dry
05-2-4	T 5 S, R 12 E., Section 30: N½N½	10	5	2,4-D & Dicamba	Dry
05-2-5	T 3 S, R 12 E., Section 4: NE¼	3	2	2,4-D & Dicamba	Marsh
05-2-6	T 3 S, R 12 E., Section 8: NE¼	1	1	2,4-D & Dicamba	Streamba
05-6-10	T 2 S, R 18 E., Section 21: SE¼	1	1	2,4-D & Dicamba	Pond ban
05-6-11	T 1 N, R 20 E., Section 13: SW¼	1	Spots	2,4-D or Manual	Spring
05-6-12	T 2 N, R 17 E., Section 24: SE¼	2	Spots	2,4-D or Manual	Streamba
05-4-5	Scattered along Shoshone/Richfield Railroad	4	4	2,4-D & Manual	Railroa
05-4-6	T 5 S, R 17 E.,Section 15&22: E½E½	10	3	2,4-D & Dicamba	Dry
05-4-7	T 5 S, R 17 E., Section 33: S½S½	1	1	2,4-D & Dicamba	Dry
05-4-8	T 5 S, R 17 E., Section 31: SW¼	1	1	2,4-D & Dicamba	Dry
05-4-9	T 6 S, R 17 E., Section 8: SW¼	50	5	2,4-D & Dicamba	Dry
05-4-10	T 6 S, R 17 E., Section 2: SW¼	1	Spot	Manual	Dry
05-5-2	T 11 S, R 20 E., Section 4: NW¼	1	1	2,4-D & Dicamba	Ditch b
05-5-7	T 9 S, R 18 E., Section 26: W½W½	5	1	2,4-D & Dicamba	Gravel
05-5-12	T 8 S, R 21 E., Section 5: SW¼	10	2	2,4-D & Dicamba	Pond b

Date: March 2, 1988

Attachment A

Coeur d'Alene District

Project Number: 4014 Resource Area: Cottonwood

Legal Description: T. 30 N., R. 3 W., B.M., Sections 5, 6, and 7
T. 31 N., R. 3 W., B.M., Sections 21, 28, 32, and 33

1) Weed(s) to be controlled:

Yellow starthistle (Centaurea solstitialis)

2) Method, time and area of control:

Ground application - high pressure and hand held equipment
May 1988
40 acres

3) Type of treatment and application rate:

Chemical - Tordon 22K
1 pint/acre

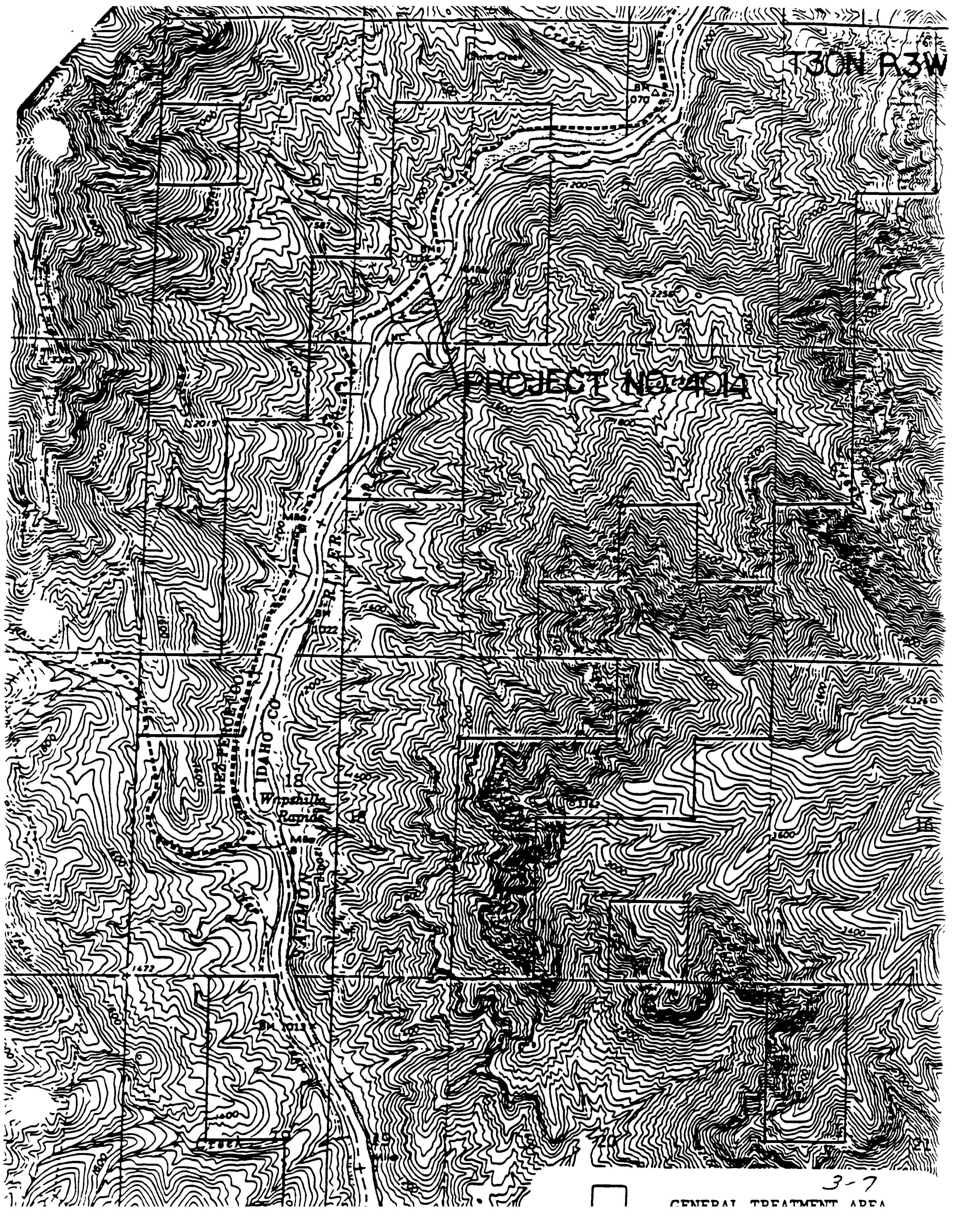
4) Special or unique features requiring protection:

Sensitive areas in the proposed project area include the Salmon River, Eagle Creek and China Creek. A minimum buffer strip of 100 feet will be maintained from all live water. Spray will not occur if wind velocity exceeds 6 mph or wind direction is toward the Salmon River.

5) Who will conduct treatment:

[X] BLM [ ] County Weed Control Authority [ ] Other

The above application will be done according to applicable restrictions on labels or labeling.


T30N R3W
PROJECT NO. 4014
Creek
IDAHO CO
NEZ PERCE CO
RIVER
18
Wapshilla
Rapids
16
21
GENERAL TREATMENT AREA

Attachment B

POSTTREATMENT EVALUATION

A posttreatment evaluation will be completed at least annually for each project area. When conditions warrant, evaluations would be done more frequently to determine the need for additional treatment or other factors requiring closer monitoring. The evaluation will consider the effectiveness of the treatment, both long term treatment and short term treatments. Long term effectiveness will consider treatments which have been completed in the past years. Short term treatments will be up to one (1) year.

The following information would be included in the evaluation:

1. Project identification and date.
2. Project area (acres).
3. Actual area treated.
4. Description of the actual treatment.
5. Objectives for the project area.
6. An evaluation of the effectiveness of the treatment on the target species.
7. Any problems encountered in the treatment.
8. Recommended future action.
9. Cost of the treatment.
10. Other information, observations, and data.

Water quality monitoring would be conducted should an accidental spill occur which could contaminate either a live stream or ground water.